

## **REMARKS**

This is a full and timely response to the Decision on Appeal mailed April 28, 2009. In the Decision on Appeal mailed April 28, 2009, the Board raises new grounds of rejection under 37 C.F.R. §41.50(b). In particular, claims 1-28 stand rejected under 35 U.S.C. §112, first paragraph, as being directed to improper single means claims or as being purely functional. Claims 1-28 stand rejected under 35 U.S.C. §112, first paragraph, as being indefinite. Applicants respectfully request consideration of the following remarks contained herein. Reconsideration and allowance of the application and presently pending claims are respectfully requested.

### **I. Response to Claim Rejections Under 35 U.S.C. § 112, First Paragraph**

While the Board found that Applicants have shown that the Examiner erred in rejecting claims 1-28 under 35 U.S.C. §101, the Board entered a new ground of rejection under 37 C.F.R. §41.50(b) and rejects claims 1-28 under 35 U.S.C. §112, first paragraph, as being directed to improper single means claims or as being purely functional. (Decision on Appeal, page 8). As indicated above, independent claim 1 has been amended through this Response. Specifically, claims 1, as amended, recites:

1. A Digital Subscriber Line (DSL) communications system comprising:  
**a central office Asynchronous Digital Subscriber Line (ADSL) transceiver unit (ATU-C)** in discrete multitone (DMT) communication with a remote ADSL transceiver unit (ATU-R), wherein the ATU-C **comprises a CO operator** configured to perform spectral shaping of a dual bit map (DBM) mode downstream transmission based on a power spectral density (PSD) mask represented by the following equation:

$$PSD_{DBMsOL} = K_{ADSL\_OL} \times \frac{C}{f_0} \times \frac{\left[ \sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left( \pi \frac{f}{f_0} \right)^2} \times \frac{1}{1 + \left( \frac{f}{f_{LP3dB}} \right)^{12}} \times \frac{1}{1 + \left( \frac{f_{HP3dB}}{f} \right)^6}, \quad 0 < f < \infty$$

where  $PSD_{DBMsOL}$  represents the PSD mask,

$K_{ADSL\_OL}$  represents a constant value,  $C$  represents a constant value,  $f$  represents a frequency of the downstream transmission,  $f_0$  represents a constant value,  $f_{LP3dB}$  represents a 3 decibel (dB) low pass frequency and  $f_{HP3dB}$  represents a 3 dB high pass frequency.

(Emphasis added). Claim 1 is directed to a DSL communications system that comprises a central office Asynchronous Digital Subscriber Line (ADSL) transceiver unit (ATU-C) in discrete multitone (DMT) communication with a remote ADSL transceiver unit (ATU-R). The ATU-C comprises a CO operator configured to perform spectral shaping of a dual bit map (DBM) mode downstream transmission based on a power spectral density (PSD) mask. The PSD mask is represented by the equation above. In view of this additional recitation of structure, Applicants respectfully request that the §112, 1<sup>st</sup> paragraph rejection be withdrawn.

Claim 15, as amended, recites:

15. A Digital Subscriber Line (DSL) communications system comprising:  
**a central office Asynchronous Digital Subscriber Line (ADSL) transceiver unit (ATU-C)** in discrete multitone (DMT) communication with a remote ADSL transceiver unit (ATU-R), wherein the ATU-C **comprises a CO operator** configured to perform spectral shaping of a far end cross talk (FEXT) bit map (FBM) mode downstream transmission based on a power spectral density (PSD) mask represented by the following equation:

$$PSD_{FBMsOL} = K_{ADSL\_OL} \times \frac{C}{f_0} \times \frac{\left[ \sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left(\pi \frac{f}{f_0}\right)^2} \times \frac{1}{1 + \left(\frac{f}{f_{LP3dB}}\right)^{12}} \times \frac{1}{1 + \left(\frac{f_{HP3dB}}{f}\right)^8}, \quad 0 < f < \infty$$

where  $PSD_{FBMsOL}$  represents the PSD mask,  $K_{ADSL\_OL}$  represents a constant value,  $C$  represents a constant value,  $f$  represents a frequency of the downstream transmission,  $f_0$  represents a constant value,  $f_{LP3dB}$  represents a 3 decibel (dB) low pass frequency and  $f_{HP3dB}$  represents a 3 dB high pass frequency.

(Emphasis added). Similarly, Applicants have amended claim 15 to now recite a DSL communications system that comprises a central office Asynchronous Digital Subscriber Line (ADSL) transceiver unit (ATU-C) in discrete multitone (DMT) communication with a remote ADSL transceiver unit (ATU-R). The ATU-C comprises a CO operator configured to perform spectral shaping of a far end cross talk (FEXT) bit map (FBM) mode downstream transmission based on a power spectral density (PSD) mask. The PSD mask is represented by the equation recited above in claim 15. Applicants respectfully request that the §112, 1<sup>st</sup> paragraph rejection of claim 15 be withdrawn.

## II. Response to Claim Rejections Under 35 U.S.C. § 112, Second Paragraph

On pages 11-12 in the Decision on Appeal, the Board asserts that in the context of a means-plus-function limitation, there is insufficient disclosure of the structure or acts to perform the recited function. The Board further asserts that even if the claims (e.g., claims 1 and 15) were construed as not containing means-plus-function limitations, mere functional recitations, without more, do not distinctly claim the invention.

As discussed above with regards to the §112, 1<sup>st</sup> paragraph rejection, Applicants have amended claim 1 to now recite a DSL communications system that comprises a

central office Asynchronous Digital Subscriber Line (ADSL) transceiver unit (ATU-C) in discrete multitone (DMT) communication with a remote ADSL transceiver unit (ATU-R). The ATU-C comprises a CO operator configured to perform spectral shaping of a dual bit map (DBM) mode downstream transmission based on a power spectral density (PSD) mask. Claim 15 has been similarly amended. In view of these amendments, Applicants respectfully request that the §112, 2<sup>nd</sup> paragraph rejection be withdrawn.

**CONCLUSION**

Applicants respectfully submit that all pending claims are in condition for allowance. Favorable reconsideration and allowance of the present application and all pending claims are hereby courteously requested. If, in the opinion of the Examiner, a telephone conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (770) 933-9500.

No fee is believed to be due in connection with this amendment and response to Office Action. If, however, any fee is believed to be due, you are hereby authorized to charge any such fee to deposit account No. 50-0835.

Respectfully submitted,

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